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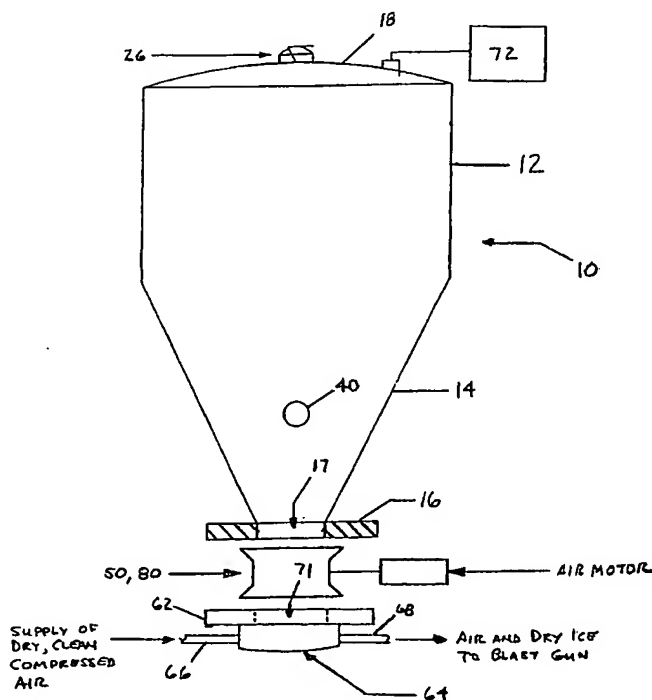
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[Continued on next page]

(54) Title: **DRY ICE FEEDING APPARATUS AND METHOD**



(57) Abstract: A dry ice feeding apparatus comprises a hopper (10) adapted to store a supply of dry ice pieces. The hopper (10) has a substantially cylindrical upper portion (12), a frusto-conical lower portion (14) depending downwardly from the upper portion, and a head portion (18) disposed atop the upper portion. The hopper also has an upper opening (20) in the head portion to provide access for loading dry ice pellets into the hopper and a lower opening (17) at the bottom of lower portion. A lid (26) adapted to cover the upper opening of the hopper includes an O-ring (30) providing a fluid seal between the lid and the hopper's upper opening. A mixing chamber (64) is disposed beneath the lower opening of the hopper. The mixing chamber includes a mixing cavity (70), a dry ice inlet (71) to permit dry ice pieces to be supplied from the hopper to the mixing cavity, a fluid inlet 66 adapted to connect a supply of compressed air or other pressurized gaseous fluid to the mixing cavity, and a fluid outlet (68) adapted to connect the mixing cavity to a blast gun or other dispensing device. The mixing chamber directs flow of the pressurized gaseous fluid from the fluid inlet through the mixing cavity and out the fluid outlet, permitting dry ice pieces supplied from the hopper to the mixing cavity to become entrained in the gaseous fluid flowing through the mixing cavity and out the fluid outlet. The dry ice inlet also provides a fluid connection between the fluid inlet of the mixing chamber and the hopper to permit the gaseous fluid to pressurize the hopper when the lid seals the upper opening.

The apparatus also can include a metering valve (50) to control the supply rate of dry ice pieces from the hopper to the mixing chamber or a crushing device (80) to control the size of dry ice pieces supplied from the hopper to the mixing chamber.



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